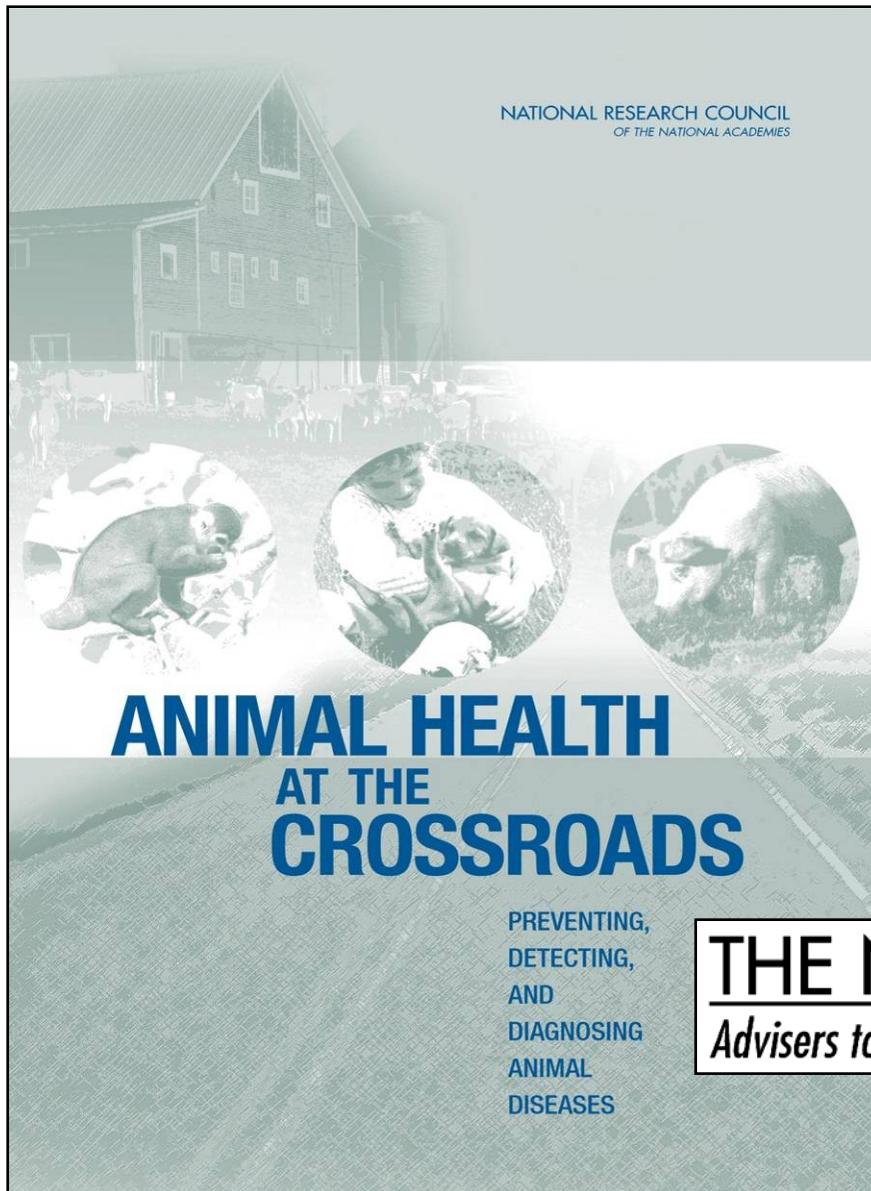


# Assessing the Nation's Animal Health Infrastructure



**THE NATIONAL ACADEMIES**  
*Advisers to the Nation on Science, Engineering, and Medicine*

*S.K. Hietala – Feb. 2006*

# Assessing the Nation's Animal Health Infrastructure

The study was commissioned based on the rapidly changing nature and impacts of disease due to:

- Global trade and travel
- Intensification of agriculture
- Blurring of rural-urban boundaries
- Growing interfaces with public health, wildlife, economies
- Emerging diseases (SARS, WNV, AI)
- Threat of bioterrorism



# Assessing the Nation's Animal Health Infrastructure

Envisioned as a 3-phase analysis of the U.S. framework to support animal health:

- 1) Prevention, Detection, Diagnosis
- 2) Surveillance and Monitoring
- 3) Response and Recovery



# Assessing the Nation's Animal Health Infrastructure:

## *Committee Members: Phase 1*

### ***Chairs:***

Lonnie J. King	Michigan State University, East Lansing, MI
Margaret A. Hamburg	Nuclear Threat Initiative, Washington, DC

### ***Committee Members:***

Sharon Anderson	North Dakota State University
Corrie Brown	University of Georgia
Timothy J. Herrman	Texas A&M University
Sharon K. Hietala	CAHFS - University of California, Davis
Helen H. Jensen	Iowa State University
Carol A. Keiser	C-BAR Cattle Company, Inc.
Scott R. Lillibridge	University of Texas Health Science Center at Houston
Terry F. McElwain	WADDL - Washington State University
N. Ole Nielsen	Ontario Veterinary College, University of Guelph
Robert A. Norton	Auburn University
Michael T. Osterholm	University of Minnesota
Patricia Quinlisk	Iowa Department of Public Health
Linda J. Saif	Ohio State University
Mark C. Thurmond	University of California, Davis
Kevin D. Walker	Inter-American Institute for Cooperation in Agriculture

## *Expert Testimony and Review*

Alex Ardans	University of California Davis
Nancy L. Ascher	University of California San Francisco
Peter Eyre	Virginia Polytechnic Institute and State University
E. Paul J. Gibbs	Univeristy of Florida
George M. Gray	Harvard School of Public Health
Donald A. Henderson	Johns Hopkins University
Bob Hillman	Texas Animal Health Commission
Peter J. Johnson	USDA CSREES
Dennis F. Kohn	Columbia University College of Physicians and Surgeons
Elizabeth Krushinskie	Pilgrim's Pride Corporation
Gary Jay Kushner	Hogan and Hartson, LLP
Karen E. Lawson	US Department of Agriculture
F.A. (Ted) Leighton	University of Saskatchewan
Andrew McCabe	Association of Veterinary Medical Colleges
James D. McKean	Iowa Pork Producers Industry Center
Curt Mann	White House Department of Homeland Security
Maureen McCathy	US Department of Homeland Security
Thomas McKenna	USDA APHIS FADDL PIADC
Lawrence E. Miller	USDA VS
Harley Moon	Iowa State University
Andrea Morgan	USDA VS
Mo Salman	Colorado State University
Scott Severin	Department of Defense Veterinary Service Activity
Suzanne Kennedy Stoskopf	Pylon Research Laboratories
Nga Tran	Exponent Inc., Food and Chemicals Practice
Leon Weaver	Bridgewater Dairy LLC
Gary Weber	National Cattleman's Beef Association
Elizabeth Williams	University of Wyoming
Terry Wilson	USDA



# Assessing the Nation's Animal Health Infrastructure: *Case Studies and Gap Analysis*

## Foreign Animal (Trans-boundary) Diseases

- *Foot-and-mouth disease, exotic Newcastle disease*

## Emerging, Recently Emergent Diseases

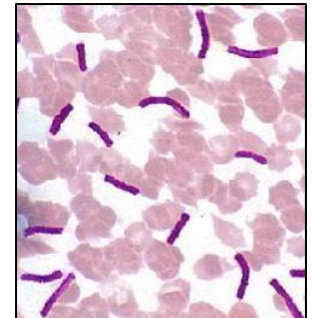
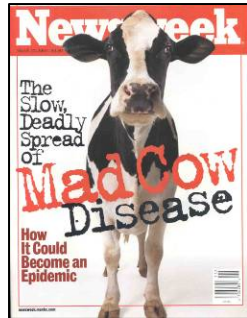
- *SARS, Monkeypox, Bovine Spongiform Encephalopathy*

## Endemic Diseases

- *West Nile virus, Chronic Wasting disease, avian influenza*

## Novel and bioengineered pathogens

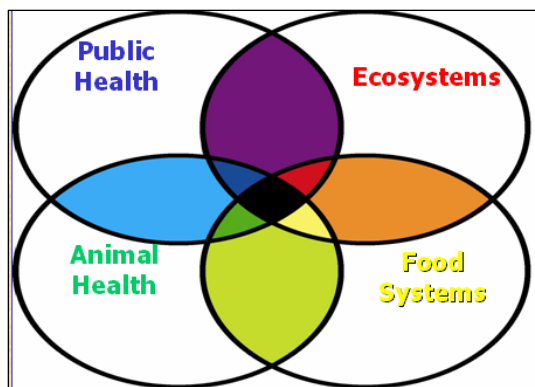
## Biothreat scenarios



# Assessing the Nation's Animal Health Infrastructure:

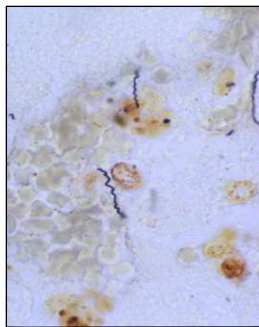
## *Coordination of the Framework Components*

**Recommendation 1:** The nation should establish a high-level, centralized, authoritative, and accountable coordinating mechanism or focal point for engaging and enhancing partnerships among local, state, and federal agencies and the private sector.



# Assessing the Nation's Animal Health Infrastructure: *Technological Tools for Preventing, Detecting, and Diagnosing Animal Diseases*

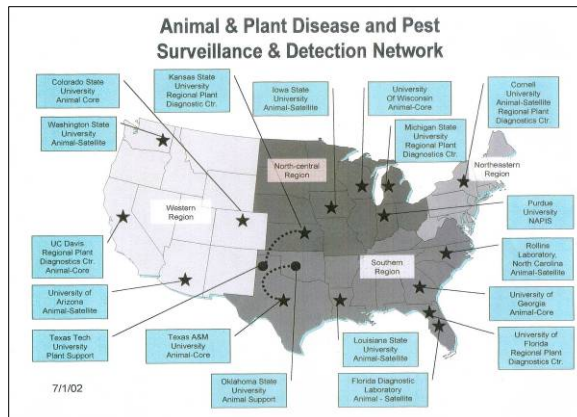
**Recommendation 2:** Agencies and institutions—including USDA and DHS—responsible for protecting animal industries, wildlife, and associated economies should encourage and support rapid development, validation, and adoption of new technologies and scientific tools for the detection, diagnosis, and prevention of animal diseases and zoonoses.





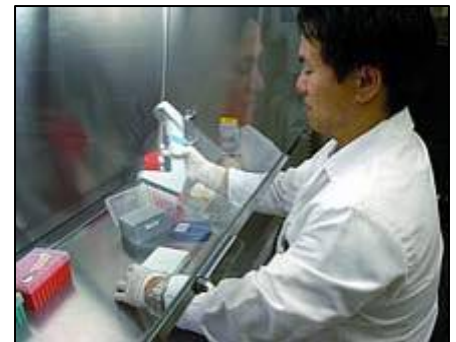
# Assessing the Nation's Animal Health Infrastructure: *Scientific Preparedness for Diagnosing Animal Diseases – Laboratory Capacity and Capability*

**Recommendation 3:** The animal health laboratory network should be expanded and strengthened to ensure sufficient capability and capacity for both routine and emergency diagnostic needs, and to ensure a robust linkage of all components (federal, state, university, and commercial laboratories) involved in the diagnosis of animal and zoonotic diseases.



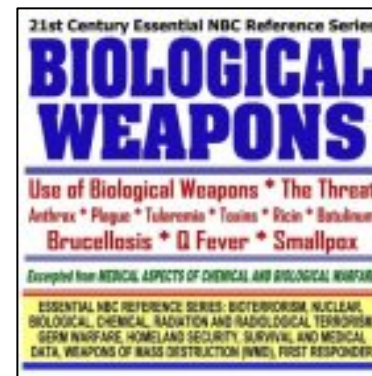
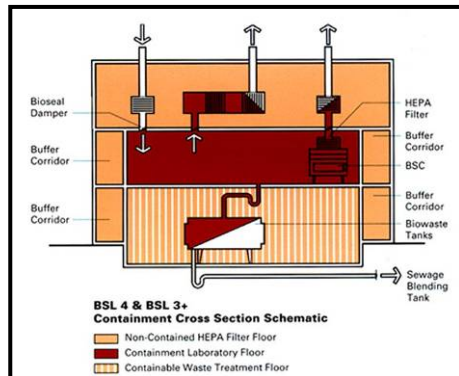
# Assessing the Nation's Animal Health Infrastructure: *Scientific Preparedness for Diagnosing Animal Diseases – Animal Health Research*

**Recommendation 4:** Federal agencies involved in biomedical research (both human and veterinary) should establish a method to jointly fund new, competitive, comprehensive, and integrated animal health research programs; ensure that veterinary and medical scientists can work as collaborators; and enhance research, both domestically and internationally, on the detection, diagnosis, and prevention of animal and zoonotic disease encompassing both animal and human hosts.



# Assessing the Nation's Animal Health Infrastructure: *Scientific Preparedness for Diagnosing Animal Diseases – Animal Health Research*

**Recommendation 5:** To strengthen the animal health and zoonotic disease research infrastructure, the committee recommends that competitive grants be made available to scientists to upgrade equipment for animal disease research and that the nation construct and maintain government and university biosafety level 3 (BSL-3 and BSL-3 Ag) facilities for livestock (including large animals), poultry, and wildlife.





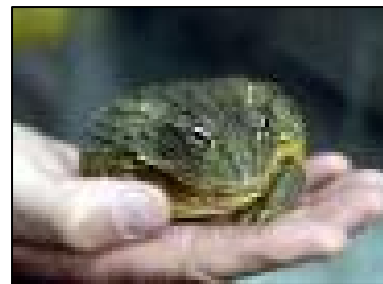
# Assessing the Nation's Animal Health Infrastructure: *International Interdependence and Collaboration*

**Recommendation 6:** The United States should commit resources and develop new shared leadership roles with other countries and international organizations in creating global systems for preventing, detecting, and diagnosing known and emerging diseases, disease agents, and disease threats as they relate to animal and public health.



# Assessing the Nation's Animal Health Infrastructure: *Importation, Sale, and Transport of Animals*

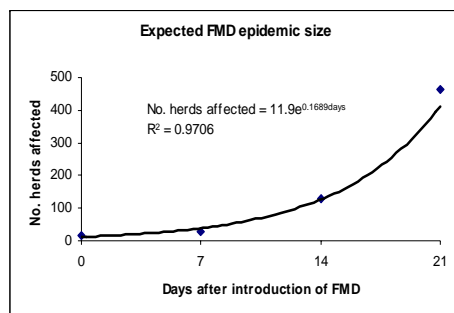
**Recommendation 7:** Integrated and standardized regulations should be developed and implemented nationally to address the import, sale, movement, and health of exotic, non-domesticated, and wild-caught animals.





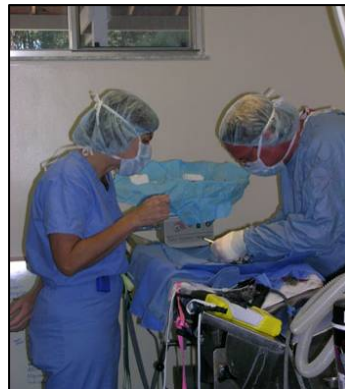
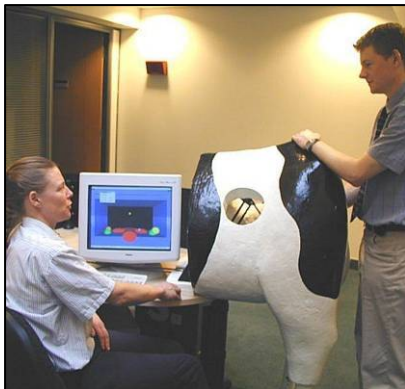
# Assessing the Nation's Animal Health Infrastructure: *Addressing Future Animal Disease Risks*

**Recommendation 8:** The U.S. Department of Agriculture, Department of Homeland Security, Department of Health and Human Services, and state animal and public health agencies and laboratories should improve, expand, and formalize the use of predictive, risk-based tools and models to develop prevention, detection, diagnostic, and biosecurity systems and strategies for indigenous, exotic, and emerging animal diseases.



# Assessing the Nation's Animal Health Infrastructure: *Education and Training*

**Recommendation 9:** Industry, producers, the American Veterinary Medical Association, government agencies, and colleges of veterinary medicine should build veterinary capacity through both recruitment and preparation of additional veterinary graduates into careers in public health, food systems, biomedical research, diagnostic laboratory investigation, pathology, epidemiology, ecosystem health, and food animal practice.



# Assessing the Nation's Animal Health Infrastructure: *Education and Training*

**Recommendation 10:** The USDA, state animal health agencies, the American Veterinary Medical Association, and colleges and schools of veterinary medicine and departments of animal science should develop a national animal health education plan focusing on education and training of individuals from all sectors involved in disease prevention and early detection through day-to-day oversight of animals.





# Assessing the Nation's Animal Health Infrastructure:

## *Improving Public Awareness of the Economic, Social, and Human Health Effects of Animal Diseases*

**Recommendation 11:** The government, private sector, and professional and industry associations should collectively educate and raise the level of awareness of the general public about the importance of public and private investment to strengthen the animal health framework.



# Assessing the Nation's Animal Health Infrastructure: *Animal Health at the Crossroads*

“Given the changing nature of the risks with which the framework must cope, it is unlikely that the current philosophy on how to protect animal health will be adequate in the future. The risks of animal disease must be dealt with in a broader context that includes anticipating the emergence and spread of disease on local and global scales and recognizing relationships between animal disease, human health, and the environment.”

*“Good players skate to where the puck is, great players skate to where the puck is going to be.” - Wayne Gretsky*